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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,591	11/21/2003	Hans-Werner Schildmann	02-760-US2	3277
34704	7590	10/19/2004	EXAMINER	
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			MCKINNON, TERRELL L	
			ART UNIT	PAPER NUMBER
			3743	

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/719,591

Applicant(s)

SCHILDMANN ET AL.

Examiner

Terrell L Mckinnon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-16, 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Echols (U.S. 4,569,097) in view of Hargett, Sr. et al. (U.S. 5,795,402).

Echols discloses a system for cleaning tubes comprising:

- a plurality of tubes (3) arranged in parallel between two chambers (12 and 13);
- the cleaning bodies (2) are formed such that they withstand aggressive fluid media;
- the cleaning bodies have an outer contact surface suitable for removing deposits from a tube inner wall passing through the tubes (5) due to the pressure of the fluid medium;
- the cleaning bodies have their contact surfaces forced against the tube inner wall due to contact pressure;
- the cleaning bodies are collected and introduced into the inlet openings of the tubes for further cleaning;

- bodies are recycled, namely after the continuous or discontinuous pass through the tubes, by being either directly reintroduced at the inlet side of the tubes for another pass or by being first collected in a catching device (40 or 93);
- the cleaning of the tubes is interrupted and carried out again after a predetermined period of time has elapsed or depending on the amount of dirt or another parameter;
- in the recycling conduit for the cleaning bodies between the inlet and outlet sides of the heat exchanger, a filter or a moveable or fixed sieve (40 or 93) for retrieving the cleaning bodies from the media flow is provided as a catching device for said cleaning bodies;
- downstream of the catching device there is a lock (94) for filling, retrieving and intermediate storage of the cleaning bodies during the interruption of the tube cleaning;
- the cleaning bodies are formed to be essentially spherical resilient rolling bodies having a cleaning surface, wherein the entire surface of said cleaning bodies forms the contact surface for removing deposits from the tube inner wall;
- the outer diameter of the cleaning bodies in their uncompressed state, i.e. before introduction of the cleaning bodies into the tubes is greater than the inner diameter of the tubes and adapts to the inner diameter when the cleaning bodies are introduced into the inlet

- openings of the tubes and are resiliently compressed therein;
- cleaning bodies comprise a buoyancy element (60, 73 and 88) on each inside and a cleaning element (62, 70 and 91) on each outside (Figs. 6, 15 and 16);
  - the buoyancy element is arranged at each center of said cleaning bodies (Figs. 7, 10 and 16) and is comprised of one or more pressure resistant hollow bodies, or hollow bodies made pressure resistant;
  - the cleaning element forms the contact surface of each of the cleaning bodies and consists of a layer of temperature- and medium-resistant abrasive material attached either directly to the buoyancy element or to an intermediate element;
  - each cleaning element is formed to be resilient;
  - a resilient elasticity medium (62, 70 and Fig. 10) carries said cleaning element;
  - cleaning bodies each consist of at least a downstream - as seen in the flow direction of the liquid flow medium in the tubes buoyancy element and a cleaning element arranged at the upstream side thereof (Figs. 6, 15 and 16).
  - each buoyancy element has a ball-shaped or spherical form and is made of a high-temperature resistant plastics material (Figs. 5, 9, 10, 12 and 16); and
  - on either side of each cleaning element a buoyancy element is arranged;

- and the use of other fluids maybe utilized (column 5, lines 42-49).

Echols's invention fails to disclose the fluid being crude oil and the cleaning bodies are resistant to temperatures above 120 degrees Celsius.

3. However, Hargett teaches the use of cleaning a pipeline system for that use crude oil at temperatures above 120 degrees Celsius (column 1, lines 30-40).

Given the teachings of Hargett it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cleaning bodies of Echols with the cleaning bodies that are resistant to temperatures above 120 degrees Celsius and the fluid being crude oil.

Doing so would provide an effective tube cleaning operation for a variety of different application and fluids.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Echols (U.S. 4,569,097) in view of Hargett, Sr. et al. (U.S. 5,795,402) as applied to claims above, and further in view of Shishkin et al. (U.S. 4,891,115).

Echols invention, as modified by Hargett, discloses all of the claimed limitations from above except for the cleaning element having a leaf or disk shaped, has a circular form and is made of spring metal, and carries a crown of resilient lamellae acting as a contact surface and contacting the inner wall of the tube.

5. However, Shishkin teaches the use of a cleaning element (1) having a leaf or disk shaped, has a circular form and is made of spring metal, and carries a crown of resilient lamellae (See Fig. 13) acting as a contact surface and contacting the inner wall of the tube.

Given the teachings of Shishkin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system for cleaning tubes of Echols with cleaning element having a leaf or disk shaped, has a circular form and is made of spring metal, and carries a crown of resilient lamellae acting as a contact surface and contacting the inner wall of the tube.

Doing so would provide an alternate cleaning member that has a force-scraping member to enhance the cleaning operation.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Echols (U.S. 4,569,097) in view of Hargett, Sr. et al. (U.S. 5,795,402) as applied to claims above, and further in view of Heeren et al. (U.S. 3,319,710).

Echols invention, as modified by Hargett, discloses all of the claimed limitations from above except for the cleaning bodies being formed as roller shaped metal brushes.

7. However, Heeren teaches the use of a cleaning element being formed as roller shaped metal brushes (See Figs. 7-16).

Given the teachings of Heeren, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system for cleaning tubes of Echols with cleaning elements being formed as roller shaped metal brushes.

Doing so would provide a brushing member for enhanced contact surface cleaning of the inner wall of the tube.

#### ***Allowable Subject Matter***

3. Claim 19 is objected to as being dependent upon a rejected base claim, but

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would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited for disclosing related limitations of the applicant's claimed and disclosed invention. Echols, Baron, Habgy, Heeren, Verret and Tsou.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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A handwritten signature in black ink, appearing to read "Terrell L. McKinnon". The signature is stylized with a large, sweeping initial "T" and "M".

Terrell L McKinnon

Primary Examiner

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October 18, 2004